Remarks

Claims 1-30 are pending in the present application, wherein original claims 1, 13, 23, 24, 26, and 29 are independent claims. Claims 1, 7-9, 12, 13, 23, 24, 26 and 29 have been amended for clarification. All claims have been variously rejected under 35 USC §102 and §103. Applicant traverses these rejections and requests withdrawal thereof.

Objections to the Specification

The specification has been amended on pages 1-2 and 6 to include application serial numbers in place of the blanks within the references. Applicant requests withdrawal of these objections.

Rejections Under 35 USC. §102

The Office Action rejects claims 1-2, 7, 10, 12, 23, 26, and 29 under 35 USC §102 as being anticipated by US Patent No. 5,748,841 to Morin et al. ("Morin"). While the *Phonetic Data Processing System and Method* of the present invention and the *Supervised Contextual Language Acquisition System* of Morin each have an ability to parse received speech and to use grammars, they actually produce very different results, and do so in very different ways. In the present invention, the system interprets the user's speech to generate a semantic tree instance representing all possible valid interpretations of the speech, without regard to the context of an application. It does not tell the user how to build his sentences. In contrast, in Morin the system attempts to help the user build his sentences within the structure of "legal" words having predetermined meaning within the context of the application. For instance, Morin claims to provide a "... dialogue environment and user interface to assist a user in acquiring the language of an application or computer program ... The system allows users unfamiliar with the language or available commands ...to progressively build sentences which will have meaning to the application ...". (Morin, col. 22 lines 46-55) Morin's title makes this clear, *Supervised Contextual Language Acquisition System*.

With respect to claim 1, as stated in the Office Action, Morin discloses "a language

acquisition system" – a system "to assist a user in acquiring the language of an application to progressively build sentences...". Such a system is not found claim 1, which claims a "phonetic data processing system" – a system to process phonetic data, not to teach a user how to acquire the language of an application and build sentences.

The Office Action likens the rich semantic grammar of claim 1, element B with the "syntactic-semantic grammar" of Morin col. 3, lines 47-61, also citing Morin col. 7, lines 61-63.

The Office Action likens the *phonetic data processing module* of claim 1, element C, with the *I/O Manager* of Morin, citing Morin's I/O Manager 26 of FIG. 1 and col. 5 line 57 to col. 6 line 4. And the Office Action asserts that the *phonetic searcher* of element C(1) is anticipated by "the combination between *recognizer* and *input handler*" of the *I/O Manager* (see FIG. 1) and that the sequences comprising a set of best words is anticipated by " a list of possible interpretations, or semantic expressions" "from the syntactic-semantic grammar". As a matter of clarification, this element of claim 1 has been amended to clarify that the phonetic searcher uses "syntactic analysis" to generate the set of best words, not semantic analysis, and does so without using semantic information. (See present Application, page 8 lines 1-5 and 20-21). In view of the clarification to element C(1) of claim 1 and the fact that the cited text from Morin teaches using "A single semantic representation formalism" to generate "a list of possible meanings expressed in the semantic language."(Morin, col. 5 line 65 to col. 6 line 4) , the *phonetic searcher* of claim is not anticipated by the Morin's *I/O Manager* (including the combination between *recognizer* and *input handler*).

The Office Action also asserts that the *semantic parser module* of claim 1, element C(2) is anticipated by the *dialog instructions* described in Morin col. 3 lines 47-61. The *semantic parser module* is configured to generate a set of semantic data that includes "...all valid interpretations..." of the sequences generated by the phonetic searcher of element C(1). This element has been amended to clarify that the *set of semantic data* is context free – so independent of the application for which it will ultimately be interpreted. This is fundamentally different from the cited text from Morin, which discloses "Application scripts are programs made of elementary dialogue instructions interpreted by the dialogue system ...They describe what are possible user commands

that are valid..." First, since *dialogue instructions* are part of application scripts and application scripts are not used by the *semantic parser* of claim 1 element C(2), then the *semantic parser* is not anticipated by the cited text of Morin.

Second, the grammars in used Morin include a "... grammar for the target application (task grammar) and also for the dialog system itself (system grammar)." (Morin, col. 3 lines 43-46) A target application is the application with which the user seeks to interact "such as a paint program" – so defines a context. (Morin, col. 3, line 36) Therefore, the user inputs that are evaluated in Morin are done so within a context of the target application (e.g., paint program). So when Morin refers to "user commands that are valid" it refers to user commands that are valid within the context of the target application. This is a significant distinction, since the *semantic parser* of claim 1 element C(2) generates "a context free ... set of semantic data that includes all valid interpretations...". As described in the present application, context is considered later by a *semantic evaluator* that is configured to interpret the context free set of semantic data (e.g., a semantic tree instance) within the context of an application. But application context is not used by the *semantic parser* of claim 1 element C(2).

For all of the above reasons, claim 1, and its dependent claims, are not anticipated by the citations of Morin and withdrawal of this rejections is respectfully requested.

With respect to claim 2, the Office Action asserts that Morin at col. 19 lines 50-55 anticipates the sequences comprised of "sets of words combined to defined word paths". However, the sequences in claim 2 (depending from claim 1) are context free. However, the Morin cite teaches context dependent trees, wherein "...the dialogue manager will first build two constraint trees that will represent all possible syntactic structures that make sense in the current dialogue context." Accordingly, claim 2 is not anticipated by the citation of Morin and withdrawal of these rejections is respectfully requested.

Claim 7 has been rewritten as an independent claim to include all of the limitations of original claim 1, from which it originally depended. The Office Action asserts that Morin col. 4 lines 5-15 anticipates the RSG grammar tree having syntactic and semantic information are each node of the tree. Here Morin talks about generating syntactic and /or semantic constraint trees

based on the current state of a dialog, or context. The trees "represent syntactic constraints that are applied on the system grammar and task grammar." First, the trees are not the grammars themselves. Rather, according to Morin, they represent constraints to be applied to the grammars. Second, neither the constraint trees or the two grammars of Morin are taught has trees having syntactic and semantic information at each node. Constraint trees are shown in Morin's FIG. 10 – having only rules at many nodes and only words at other nodes, not semantic and syntactic information at each node. Since Morin does not disclose having syntactic and semantic information at each node in a grammar tree, it does not anticipate claim 7, which is now independent. Accordingly, claim 7 is not anticipated by the citation of Morin and withdrawal of the rejection is respectfully requested.

With regard to dependent claim 10, as has been pointed out above with respect to its independent claim 1, Morin does not anticipate a context free set of semantic data. Furthermore, Morin does not disclose a semantic evaluator configured to interpreted that context free set of semantic data in accordance with the context of an application. In Morin, the "list of possible interpretation, or semantic expressions" cited in the Office Action are determined in within the context of the target application, also as discussed above. So the *semantic evaluator* of claim 10 would seem duplicative, so not needed, if the set of semantic data were not context free – as is the case in the present invention. Accordingly, claim 10 is not anticipated by the citation of Morin and withdrawal of the rejection is respectfully requested in light of the foregoing.

Claim 12 has been rewritten as an independent claim to include all of the limitations of original claim 1, from which it originally depended. Claim 12 included the limitation that the *set of semantic data* was a "semantic tree". But the Office Action asserts that claim 12 is anticipated by Morin col. 3 lines 47-51, col. 4 lines 5-16 and col. 22 lines 33-45. As with clam 1, the clarification has been made within amended claim 12 that the *semantic tree* (i.e., set of semantic data) is context free – unlike Morin's the task grammar and the syntactic constraint trees. These grammars and trees of Morin are to be used to match to the utterance, or to constrain the match – as *reference* grammars. They are not trees representing all valid interpretations of an utterance, nor are they context free. In contrast to Morin, Claim 12 refers not to the reference grammars,

but to the actual match result data.

The Office Action's cite of col. 22 lines 33-45 is as an example that clearly shows that claim 12 is not anticipated, wherein the Morin cite provide that "*trees* are constructed only once, after each new dialogue *context*, but are used ...to build the different *lists of next possible words*". From this one sentence, several distinctions are clear. First, the *trees* are context dependent – unlike the semantic tree of claim 12. Second, the *tree* is used *to build lists of possible words* – the opposite is true in the present invention where the "set of best words" is used to build the semantic tree. (See claim 12, element C(1).) Third, the *next possible words* (See Morin FIG. 3.) are words that are presented graphically as guidance to the user of what to speak next, as legal word choices the user has within the context of the target application during the on-going dialogue. But in the present invention the "all valid interpretations" are interpretations of words already spoken by the user, not possible words that the user could speak next within the context.

Accordingly, claim 12, now independent, is not anticipated by the citations of Morin and withdrawal of the rejection is respectfully requested in light of the foregoing.

Independent claim 23 has been amended to clarify that the rich semantic grammar tree has syntactic and semantic information at each node and that the word list is generated using syntactic analysis. Accordingly, for reasons stated above with respect to claims 1 and 7, amended claim 23 is not anticipated by the citations of Morin and withdrawal of the rejection is respectfully requested.

Independent claim 26 has been amended to clarify that the set of semantic data is context free – unlike Morin. Also unlike Morin, the *valid interpretations* of claim 26 are much different that the *lists of possible next words* generated in Morin. The *valid interpretations* of claim 26 are of received speech, whereas the *next possible word lists* of Morin provide guidance to the user of what legal words he should speak next. Accordingly, for reasons stated above with respect to claims 1 and 12, amended claim 26 is not anticipated by the citations of Morin and withdrawal of the rejection is respectfully requested.

In dependent claim 29 has been amended to clarify that the semantic tree evaluation tool is operates on a context free semantic tree and which determines a valid interpretation using the

context of an application program. This differs from Morin, which uses the context of a target application throughout the processing of a received utterance. Furthermore, the citation of Morin (col. 11) concern overall management of servers, and generation of next grammars. This seems to have nothing to do with semantic evaluation of a phonetic stream. Accordingly, for reasons stated above with respect to claims 1, 10, 12, and 26 amended claim 29 is not anticipated by the citations of Morin and withdrawal of the rejection is respectfully requested.

Rejections Under 35 USC. §103

The Office Action has rejected claims 3, 8, 11, 13-15, 19-21, 28 and 30 under 35 USC §103(a) as being unpatentable in view of Morin et al. as applied to claim 1, 26 and 29 in view of US Patent No. 4,688,195 to Thompson et al. ("Thompson").

For reasons set forth with respect for independent claims 1, 7, 12, 13, 23, 24, 26 and 29, claims 3, 8, 11, 13-15, 19-21, 28 and 30 are also believed to be patentanble over the cited references and withdrawal of the rejections is respectfully requested.

Furthermore, with regard claim 3 and 15, the Office Action asserts that Morin does not show extraction of a context free grammar, but that Thompson does at col. 3 line 68 – col. 4 line 1. Claims 3 and 15 claim a contest free grammar comprising *syntactic information*. However, this Thompson cite discloses "A "*semantic* grammar" (a context-free grammar that encodes the semantics of the domain) ...is used to guarantee semantic coverage." This is in direct contrast to the context free grammar of claims 3 and 15, which does not include semantic information, but rather includes syntactic information. (See present application page 7 lines 1-5). Accordingly, for these additional reasons claims 3 and 15 are also not obvious in view the citations to Morin and Thompson and withdrawal of the rejections is respectfully requested.

Furthermore, with regard to claim 8, the Office Action asserts that Morin does not disclose *categories* dictating interpretation of a corresponding word, but Thompson does at col. 10 lines 25-38. The cited reference discusses using categories for parsing a phrase – which is different then claim 8. In the present invention, "categories are symbols, possibly with values, that mark the path for future semantic interpretation. (Present application, page 8 lines 11-12) Nevertheless,

claim 8 has been amended to clarify that the category may dictate interpretation of semantic data at a *node* – rather than a "word". (See present application page 6 line 18 – page 8 line 19 and page 11 line 17 to page 12 line 3). Neither the citation of Morin or Thompson disclose or suggest using a category (as defined within the present application) for semantic interpretation. Accordingly, for these additional reasons claim 8 is also not obvious in view the citations to Morin and Thompson and withdrawal of the rejection is respectfully requested.

Furthermore, with regard to dependent claims 11, 21, 28 and 30 the Office Action asserts that Morin does not disclose a *semantic evaluator* configured to determine a category at a node, as a function of context, and to apply values at each node a corresponding category to determine the linguistic result, but that Thompson does so at col. 9 lines 60 to col. 10 line 38. As previously mentioned, Morin does not teach the *set of semantic data* of the present invention, nor the *semantic evaluator*. In the present invention the meaning of "semantic data" is as the output of the semantic parser. The present invention discloses trees that represent the linguistics of an actual utterance. In contrast, Morin and Thompson discuss stored or even previously generated grammars useful in assisting the user in his completion of phrases. The discussion of categories in Thomson therefore is not relevant to our case. Accordingly, for these additional reasons claims 11, 21, 28 and 30 are not obvious in view of the citations to Morin and Thompson and withdrawal of the rejection is respectfully requested.

Independent claim 13 has been amended consistent with claim 1 discussed above. And, for the same reasons as put forth for claims 1 and 3, is also not obvious in view the citations to Morin and Thompson and withdrawal of the rejection is respectfully requested.

With regard to claim 14 the *constraint trees* of Morin do not make obvious the *sequences* (comprising words and word paths) of claim 14. Morin's constraint trees are used to generate a completion list of next possible words used to guide the user in what to say next. In contrast the sequences of the present invention related to what the user has already spoken. Accordingly, for these additional reasons claim 14 is not obvious in view of the citations to Morin and Thompson and withdrawal of the rejection is respectfully requested.

Claim 19 is believed patentable for the same reasons has put forth with respect to claim 13,

from which it depends, and independent claim 7, which includes similar limitations. Accordingly, withdrawal of the rejection is respectfully requested.

Claim 20 is believed patentable for the same reasons as put forth with respect to claim 13, from which is depends, and claim 10, which includes similar limitations. Accordingly, withdrawal of the rejection is respectfully requested.

The Office Action has rejected claims 4-7, 16-19, 24-25 and 27 under 35 USC §103(a) as being unpatentable in view of Morin et al. and Thompson as applied to claim 1, 13 and 26 in further view of US Pub. No. 2001/0041978 to Crespo et al. ("Crespo").

For reasons set forth with respect for independent claims 1, 7, 12, 13, 23, 24, 26 and 29, claims 4-7, 16-19, 24-25 and 27 are also believed to be patentanble over the cited references and withdrawal of the rejections is respectfully requested.

Independent claim 24 has been amended to make clarifications made and discussed above. Namely that the set of words representing valid interpretations is context free. Accordingly, as discussed above, claim 24 is also believed to be patentanble over the cited references and withdrawal of the rejections is respectfully requested.

The Office Action has rejected claim 9 under 35 USC §103(a) as being unpatentable in over Morin et al. as applied to claim 1 in view of US Patent No. 4,829,423 to Tennant et al. ("Tennant").

Tennant discloses some specific operations, but they are not self-referential tree operators, but symbols of operators to be sent to a database query. In the context of the linguistic interpretation, they are constants. Furthermore the operators are not invoked in evaluation of the semantic tree instance. The processing of the present invention includes multiple interpretations and flexibility of processing the semantic result, without the cost of complex coding. Regardless, claim 9 has been amended for clarification, similar to the amendments to claim 8.

For reasons set forth above and with respect for independent claims 1, claims 9 is also believed to be patentanble over the cited references and withdrawal of the rejections is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees under 37 C.F.R.

§1.16 and §1.17 that may be required, or credit any overpayment, to our Deposit Account No. 50-1133.

Respectfully submitted,

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